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ABSTRACT

The National Commission on Secondary Vocational Education was formed in January 1984 to examine the role and function of secondary vocational education. During its deliberations, the commission addressed the following areas of concern: perceptions of vocational education, access, equity, curriculum, vocational education teacher recruitment and preparation, standards and accountability, articulation, leadership in vocational education, partnerships among vocational education, business, labor, and the community, and field-based learning. After more than seven months of site visits and hearings across the country, the commission concluded that all secondary students need a balance of both academic and vocational experiences to prepare themselves for life in a changing world. It was further recommended that all students--including special population youth and potential dropouts--should be able to choose from a comprehensive set of course offerings across academic and vocational areas and that States should not mandate curricular requirements that restrict students' opportunities to participate in vocational education experiences. A five-part plan for teacher recruitment, preservice education, certification, and inservice education was proposed. It was suggested that the effectiveness of vocational education be judged primarily by before-and-after changes in student knowledge and that policymakers provide for vertical articulation across schools and grade levels and also for lateral articulation among school and nonschool providers of employment-related education and training. (MN)

The Unfinished Agenda

The Role of Vocational Education in the High School

The National Commission on
Secondary Vocational Education

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Preface

We Americans expect much of our schools. We expect them to capacitate youth with basic skills, transmit the cultural heritage, prepare people for work, assure adequate health habits, instill the essential capacities to participate as a citizen in a democratic society, to become safe drivers, and to deal with issues such as consumerism, sex and marriage, and differing values and attitudes, to name but a few. Schools mirror our society. We ask them to fulfill the dual and seemingly contradictory roles of preserving and unifying our society, and at the same time, transforming it. It is not surprising in a pluralistic society, such as ours, that there are different views regarding what the schools are to achieve, how well they are doing, and the appropriateness of their relative emphases and likely future directions.

Secondary vocational education is a complex set of processes and relationships embedded in an intricate institutional setting of conflicting expectations. There is a heightened interest throughout America in improving education and educational opportunities for all. It is being reflected in increased standards and higher expectations for both students and educators. It will require more creative and effective interactions within education and among other dimensions of society.

The National Commission on Secondary Vocational Education began its work against this backdrop of rapidly changing policies and expectations for secondary schools. As the Commission carried out its tasks, it strived to gain a better understanding of the mission of secondary schools and, within that, the role and function of vocational education.

The National Commission approached its task with enthusiasm and dedication. The diverse backgrounds and disciplinary perspectives of individual Commission members contributed immensely to the analysis and the recommendations of the report. It is hard to identify a single problem or issue that was not examined in depth and considered from a variety of views. Throughout their deliberations, the central concern and focus of the Commission was on improving the quality and responsiveness of secondary vocational education offerings to diverse student needs and interests. This concern is reflected throughout the report. Central to their thinking was the need for

stronger bridges between vocational and academic education to maximize learning and career opportunities for American youth.

I want to personally commend the individual Commissioners for their generous commitment of time, the intensity and thoroughness with which they addressed their task, and their willingness to examine a variety of options concerning key problems and issues.

This is the Commission's report. While the Center provided staff and assistance through funding from OVAE, the hearings and visits were conducted by the Commissioners and they developed the framework and wrote the report. It is theirs.

Their report puts forth a new vision for the critical role of vocational education in the secondary schools. It concerns itself with major issues of quality, equity, relationships, and expectations. It should produce changes and improvements toward the end that the diverse needs of American youth for improved learning and career development opportunities are fulfilled.

Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

Foreword

The National Commission on Secondary Vocational Education was formed in January 1984 by the National Center for Research in Vocational Education at The Ohio State University. The charge to the Commission was to examine the role and function of secondary vocational education. Several underlying assumptions began to emerge at the first meeting of our Commission and became clearer each time we met.

The first assumption was that recent national study reports have not adequately dealt with the role of secondary vocational education in addressing the problems of quality in American education. This report, **The Unfinished Agenda**, fills the gap left by other educational commissions in the interest of achieving a more balanced perspective on secondary school reform.

A second assumption of the Commission was that secondary school students are a diverse group, varying in background, ability, and aspirations. A wide variety of educational approaches are needed to accommodate those differences; no single prescription can be effective for everyone.

Third, the Commission assumed that those who are closest to the students best understand what educational alternatives should be provided. The most useful reforms are those emanating from local schools and classrooms. Improvement cannot be legislated; it must be nurtured at the point of most effective action—the classroom.

Finally, it was assumed that education transcends schooling. It encompasses the total history of students in the home, school, community and workplace; hence, educators must work closely with people in these various settings to coordinate their educational activities.

In addition to meeting regularly, the Commissioners have visited schools and vocational classrooms and held hearings at ten different locations around the country including: Chicago, Illinois; Columbus, Ohio; Denver, Colorado, Dallas, Texas; Hartford, Connecticut; Knoxville, Tennessee; Los Angeles, California; Portland, Oregon; Sacramento, California; and Washington, D.C. One hundred and sixty-three

persons from thirty-one states testified at these hearings. Additional discussions were held with hundreds of teachers, students, administrators, and members of the business community at various school sites. We have solicited the opinions of a wide variety of knowledgeable persons with an interest in secondary vocational education.

This report presents the judgment of the Commissioners about problems facing secondary vocational education and their likely solutions. It is based on their individual experiences and expertise, the rich input provided by the many people who testified, and a critical review of relevant research and national data. This review of the problems of secondary vocational education reflects many of the same broad problems of general education, and many of the solutions complement those that have been prescribed in recent reports on education. A frank assessment of the strengths and weaknesses of secondary vocational education is made and recommendations are presented about its role and functions that we believe are in the best interests of students.

The other Commissioners and I sincerely appreciated the opportunity to participate in this study. We are grateful to the National Center, especially for the leadership of its Executive Director, Robert E. Taylor, in sponsoring our Commission. We are also indebted to Linda S. Lotto for her tireless efforts as project coordinator in keeping us on schedule and following up on our numerous requests for staff support. Our thanks are extended to Ann Nunez and Nancy Puleo for staff support and to Jeani Gray for typing the drafts. We are also thankful to the hundreds of educators who so generously prepared testimony and shared their views on the major issues affecting secondary vocational education. We believe the content of this brief report accurately conveys the nature of the promise, the problems, and solutions that were communicated to us.

Harry F. Silberman, Chairman
National Commission on Secondary
Vocational Education

Introduction:
The Case for Vocational Education

Americans are proud that our public education system is accessible to all and that our society is committed to a quality high school education for everyone. The pride is justified—but tempered by disappointment, for despite all our efforts, we have not reached our goal.

The bricks and mortar are in place. The teachers are there. But more than one-fourth of our high school students drop out before graduation, and the competencies of many of those who do graduate are questionable.

Recent criticisms of our secondary schools have documented growing deficiencies in the academic preparation of students. Many states have responded to these criticisms by increasing the number of academic courses required for high school graduation. The assumption is that more academics, which may be the best preparation for college, is also the best preparation for life. This assumption is wrong.

The response by the states has some merit—it does show a strong commitment to improving the quality of education received by students in secondary schools. However, it ignores differences in student interests and abilities, and it ignores the needs of those high school students who do not plan to go to college and who purposefully choose a vocational program.

"The response by the states . . . ignores differences in student interests and abilities, and it ignores the needs of those high school students who do not plan to go to college . . ."

A system of rigid academic requirements ignores individual differences. It screens out those who do not fit the mold. For example, requiring a third year of mathematics makes little sense, unless it is remedial, for a high school junior who cannot do sixth-grade math.

This report calls for a more balanced initiative to promote excellence and equity in our secondary schools. More is not necessarily better. Diversity may be more responsive to the problem.

Our society is obsessively concerned with higher education as a preparation for work and downgrades the intrinsic, lifelong value of education. Our secondary schools reflect this obsession by valuing only the college bound. Such a narrow focus ignores the fact that approximately 80% of the jobs in America do not require a college degree, and most students will not obtain one.

"All students whether college bound or not, need a mix of both academic and vocational courses and enough elective options to match their interests and learning styles."

This educational myopia that pervades our society produces predictable results.

- An unacceptably high percentage of students (approximately 28 percent) drop out of high school.
- Many high school graduates cannot read, write, compute, or perform well enough to find meaningful work during or following high school.
- Many college graduates, holding their unmarketable degrees, face disillusionment when their professional expectations collide with reality. They are unable to recognize the intrinsic value of their education or understand its relevance to their personal goals.
- High school vocational education is downgraded and assigned second-class status, especially trade and industrial programs. Some of the most successful vocational programs, such as clerical and computer studies, are reluctantly listed as such.

Youth unemployment, especially among minority youth, is another major, national problem. As with most of our major problems, the factors that contribute are numerous. Schools can control only the preparation and skills they provide to students. The role of vocational education should be to make youth employable, whatever the state of the economy. And this significant role can be accomplished when vocational education complements academic education.

In this report we argue for a more balanced approach to attaining excellence in secondary schools. All students, whether college bound or not, need a mix of both academic and vocational courses and enough elective options to match their interests and learning styles.

Vocational education must be a significant part of a quality high school education. Many young people enter high school already turned off to the learning process. More of the same is not the answer. Motivating students not only to do better, but also, in many cases, to remain in school, is a critical task of education. Vocational education is frequently the catalyst that reawakens their commitment to school and sparks a renewed interest in the academic skills. We believe vocational education can help prepare all of our young people for adult life, not only at work and at home, but also in how they use leisure time.

Vocational Education:
The Promise

Purposes

Much has been written about the purposes of schooling and education that reflects the agreement that, with regard to our public schools, "we want it all." We want schools to help students achieve intellectual, social, vocational, and personal goals.

"We want schools to help students achieve intellectual, social, vocational, and personal goals. Vocational education addresses all these goals."

Vocational education addresses all these goals. Broadly, vocational education should be concerned with the development of the individual student in five areas: (1) personal skills and attitudes, (2) communication and computational skills and technological literacy, (3) employability skills, (4) broad and specific occupational skills and knowledge, and (5) foundations for career planning and lifelong learning.

These purposes are shared by other parts of the secondary school system, as well as by external programs, agencies, and extracurricular functions of the school system. We all seek to provide youth with experiences that prepare them for continued educational opportunities and work, as well as for family, social, civic, and personal responsibilities.

A decline in the capacity of individual citizens to develop effective work habits, to become effective problem solvers, and to communicate will condemn us all to a meager existence. Thus, this report emphasizes how we can improve the growth-enhancing qualities of existing secondary school vocational programs. We emphasize the need to improve both immediate and deferred outcomes and to achieve both individual and societal goals.

The issue is not whether secondary students should be prepared for jobs, nor is the issue whether secondary students should receive a general education or a specialized education. The truth of the matter is that all students need both kinds of preparation. It is not an either/or situation. Students seeking employment in the skilled and technical occupations must first develop a strong foundation in general educa-

tion. Upon that base is built the specialization. For many students depending upon the occupational area of interest, the specialization will come at the postsecondary level of education.

Vocational education in the secondary school has been viewed primarily as a vehicle for occupational training. This purpose continues to be an important part of vocational education at the secondary level. However, vocational education can and frequently does offer additional opportunities to enrich the educational experience of youth.

Vocational Education: An Educational Process

What we see in secondary classrooms in America differs greatly from what we know about good teaching and learning. Recent studies of American high schools highlight a sameness and lack of variety in teaching methods. But instruction in vocational classrooms offers an alternative—an avenue for breaking away from the all-too-similar characteristics of so many classrooms.

"Vocational education is both a body of knowledge and an educational process, but the educational process has not received the degree of attention it deserves."

Vocational education is both a body of knowledge and an educational process, but the educational process has not received the degree of attention it deserves. Vocational education's potential to respond to diverse learning styles has been underutilized.

Secondary vocational programs teach problem solving and analytical skills. Applied and small-group learning activities reinforce basic communication and interpersonal skills and promote their transferability to other settings. For example, this educational process promotes—

- the ability to gather and analyze information,
- the use of scientific inquiry and reasoning,
- an appreciation of the implications of technological development, and
- an understanding of the fundamentals of how our economic system works.

Instruction in vocational classrooms is usually individualized and cooperative. Most instructors emphasize student mastery of specific skills or competencies. Students progress at their own rate. Because

some students work in teams, often on group projects, learning is also cooperative. Students help each other, and learn from each other, each contributing to the achievement of the group. Individualized and cooperative instruction have been found to improve student achievement better than conventional whole-group instruction.

As a means of teaching, vocational education often serves as the glue that holds the students' total education together, making academic work meaningful and goal-oriented. But the real strength of vocational education lies in its ability to motivate students. Secondary students enjoy their vocational activities. They find them interesting and relevant to their lives. Such programs motivate them to stay involved in productive and creative experiences. Many students report they would have dropped out of high school if they had not had the opportunity to take vocational courses in high school. Vocational student organizations are integral to motivating students.

". . .the real strength of vocational education lies in its ability to motivate students."

Vocational education also provides some students with real-world learning experiences, through cooperative education in the workplace. It taps students' natural interests in the world about them and allows them to use their tactile and kinesthetic senses in learning. The applied orientation of vocational classes, coupled with a tradition of field-based activities, stimulates student motivation and provides concrete ways to learn abstract principles. Most important, students develop competence and confidence in their abilities by applying both knowledge and skills to the task at hand. Students get immediate feedback on how well they are performing.

Clearly, viewing vocational education as an educational process highlights its great promise for accomplishing the multiple goals of secondary schooling. One message most emphasized by some reports on secondary education is the need for alternative, more effective instruction and the lack of hands-on learning in secondary schools. When we look at vocational education as a process, we find the alternative modes of instruction that these reports advocate.

Fulfilling the Promise:
Challenges to Vocational Education

The promise of vocational education faces many obstacles and challenges before it can be fully realized. As a first step, the Commission has identified and examined existing problem areas. Although they sometimes overlap, we present these problems in the following categories:

- Perceptions of vocational education
- Access
- Equity
- Curriculum
- Teacher education and recruitment
- Standards and accountability
- Articulation
- Leadership
- Business, labor, and community involvement
- Field-based learning, including cooperative education

Some of these problems and challenges are specific to vocational education, and some are faced by secondary education as a whole. All need to be addressed.

Perceptions of Vocational Education

The most common perception of vocational education is that it prepares youth for low-status jobs. This perception is rooted in the ancient concept of mind-body dualism.

"Eighty-three percent . . . felt vocational courses should be required (for students not planning to go to college)."

"Head" occupations generally require a 4-year college or professional degree. They have high status. Thus, courses and curricula that lead toward college also have high status and are valued by parents and students.

"Hand" occupations are frequently blue-collar, don't require a college or professional degree, and have low status. Thus, high school courses that lead toward these occupations are viewed as second class or peripheral within the high school curriculum.

The perception is that vocational education typically prepares youth, especially males, for blue-collar "hand" occupations. Because most middle-class parents devalue any high school program that is not a prerequisite for admission to 4-year colleges or universities, they devalue vocational education. Consequently, school officials often view and use some vocational programs as a "dumping ground" for less able students.

According to the most recent (1984) Gallup Poll of the **Public's Attitude toward the Public Schools**, the majority of people believe that vocational education courses (outranked only by mathematics and English) should be required for students not planning to go to college. Eighty-three percent of those polled felt vocational courses should be required—a dramatic increase from the 64 percent response in 1981. Further, 37 percent of the Gallup Poll respondents (up from 33 percent in 1981) felt that vocational education should be required for students planning to attend college. Clearly, this confirms a growing public sentiment for the importance of vocational experiences, especially for those not planning to attend college.

". . . both general and vocational education leaders must undertake to integrate their curricula . . ."

Educational reformers have long called for vocational and academic teachers to collaborate in developing a balanced curriculum—one in which such studies as English, science, mathematics, graphic arts, and electronics would collectively enlarge understanding of the workplace, and, in turn, correct some of the traditional perceptions and stereotypes described here. The Commission believes that both general and vocational education leaders must undertake to integrate their curricula and demonstrate the co-equal importance of academic and vocational learning. In doing this, we will be more responsive to the unique needs of all students in our nation's secondary schools.

Access: Who Knows, Who Goes

Access to secondary vocational education is becoming increasingly limited. We cite four reasons:

- An increased emphasis on academics
- Consolidation of programs
- Time scheduling
- Inadequate or inaccurate student knowledge of vocational education

"This national movement toward more and specific academic requirements . . . constrains students' access to vocational education."

As states respond to the clarion call for "excellence" by increasing graduation requirements in academic areas, the time available for student electives such as vocational education shrinks. National information in 1984 indicates that states vary, permitting 1 to 11 elective credits to satisfy total graduation requirements.[1] The difference in this range tends to correspond with whether or not individual states have proposed or adopted increased high school graduation requirements. In another 1984 study, when vocational educators were asked to respond to actual or anticipated change in vocational programs as a result of increasing high school graduation requirements, 53 percent identified either a moderate or severe reduction in enrollments.[2] Thus, this national movement toward more and specific academic requirements within the traditional time frame for graduation constrains students' access to vocational education.

In some areas of the country, this new shrinking of elective time coincides with the earlier consolidation of vocational programs into area schools, area skill centers, or regional programs. Certain districts or administrative areas offer programs at only one site. Students who attended vocational classes at their "home" school now must be bused. Travel time eats into already tight schedules and further constrains student choice of electives. Also, students often lose access to extracurricular and other social activities at the home school—activities that integrate students across curricular and ability levels.

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[1]Plisko, V.W. (ed.). **The Condition of Education** (1984). Washington, D.C.: Government Printing Office. 1984

[2]**Survey of State High School Graduation Requirements.** Arlington, Virginia: American Vocational Association. 1984.

To improve access, we also must examine the time allotted to vocational education classes in relation to the amount of time that students actually need. Rigid time allocations for instruction inhibit flexibility in and access to vocational offerings. Some instruction may require large blocks of time, even more than the traditional 3-hour laboratory block. Other instruction may be delivered more efficiently in regular 50-minute class blocks. In some districts, an additional hour added to the school day (for example, "early bird" programs), or summer offerings may provide flexibility and time for vocational instruction. Time allocation needs to fit the curriculum, not vice versa. Scheduling should not be based solely on administrative convenience, but should treat student interests, aptitudes, and developmental characteristics as equally important considerations.

Finally, inadequate student knowledge subtly but formidably constrains student access to vocational education. Students and parents need to be accurately informed about what vocational education is, how it relates to their personal and career goals, and how it can be used to help them achieve their goals. One does not choose what one knows little about or is constrained from choosing by unexamined social attitudes.

We need comprehensive career guidance programs that will provide this information and remove some of the subtle status distinctions involving vocational education. Comprehensive guidance means counseling that is available to all students, covering all subjects, leading to all occupations.

We cannot achieve this goal of comprehensive guidance when counselors must deal, on the average, with 400 or more students. Nor can this goal be achieved unless counselors and teachers cooperate in new approaches to facilitate the career development of students, unless counselors expand their use of group techniques, computer-assisted guidance, comprehensive career information systems, and other methods designed to provide assistance to all students. Counselors must serve as a resource to integrate career guidance concepts and occupational information in the classroom. In addition, the amount of shared information between vocational educators and school counselors should be increased to reinforce the likelihood that counselors will effectively advise students to consider vocational education as an option.

Equity: Vocational Education for All Groups

The 1984 law amending the Vocational Education Act of 1963 emphasizes equity in vocational education—providing relevant training for the disadvantaged, reducing sex stereotypes by enrolling students in nontraditional programs, and serving "special" populations more effectively.

"Handicapped and limited-English-proficient students are not represented (in vocational education courses) in proportion to their incidence in the general population."

Previous federal mandates have had limited success. When we look at vocational education courses in high school, we see that handicapped and limited-English-proficient students are not represented in proportion to their incidence in the general population. Of the handicapped students who are enrolled, most are found in entry-level programs or general work experience classes, and few have access to advanced classes or cooperative vocational education programs.

Meanwhile, sex-linked enrollment patterns in vocational courses resist most efforts to change them—males still are found mostly in such areas as trade and industrial, and females in office and clerical. These gender biases reflect ingrained societal attitudes held in the family and in the workplace that vocational education cannot directly affect. Nonetheless, vocational programs and guidance services need to place more emphasis on redressing issues of sex bias and equity, comparable pay, discrimination in the workplace, and the problems of multiple wage-earner families.

We find enormous inequities in vocational program quality between affluent suburban high schools and less affluent inner-city or rural schools. Although research has not always demonstrated that greater resources improve student achievement in academic areas, students in communities that provide up-to-date equipment for vocational training obviously have learning opportunities that are not available to others. Of greater concern, affluence apparently correlates with commitment. Thus, the students working with the best equipment are being taught in a system that is more committed to their vocational education.

This Commission recognizes another important question about equity: Does enrollment in vocational education provide students with education opportunities comparable to those provided students in other curriculum areas? Vocational education should not dilute the student's general education nor disenfranchise certain groups through selective enrollment. However, we find that this does occur.

"We need an enriched vocational curriculum that serves all students, regardless of their academic ability or aspirations."

Channeling less able students into specific vocational programs stigmatizes those programs and those students. When all students are low performers, the program may look bad in spite of a well-planned curriculum and excellent teaching. The quality of even the best program will suffer without an adequate number of able students because students learn important things from each other. Teachers may also come to expect less of students in those programs.

On the other hand, some programs are of high quality because of the superior capabilities of the students who are enrolled. Other programs are of high quality because, even though they contain less able students, those students have chosen vocational programs as being more interesting and congruent with their learning styles. Such programs may provide students with a niche in the high school, a promising future direction, and alternative educational opportunities to work on practical problems and develop competence and self-esteem.

It is as unfair to limit the vocational education opportunities of academic students as it is to stigmatize those who are in the programs. We need an enriched vocational curriculum that serves all students, regardless of their academic ability or aspirations. We should give all students a balanced mix of academic and vocational experience in their high school curriculum. We should provide vocational experiences for all learners and not stigmatize such courses as the exclusive preserve of special groups.

Curriculum: What Is to Be Taught

Students who concentrate their course work in vocational program areas generally spend, during grades 11 and 12, less than half of each school day in vocational classes. Now, since the push for increased graduation requirements, students may be spending even more time on required courses. The pendulum is swinging away from locally determined requirements for high school graduation to a highly structured academic curriculum, mandated from the state level, that gives students little choice.

But requiring more abstract academic learning and giving students and parents fewer opportunities to select experiences with concrete, meaningful, useful learning will not necessarily be helpful to millions of young people in the decades ahead. What is required, then? Balance and quality in the curriculum will serve students better than narrowness and quantity. We need multiple alternative strategies to

help those students who experience difficulty—who are bored, frustrated, alienated, or angry—to master basic material and see how abstract courses and concepts relate to real-life experiences.

"... students perceive vocational courses as time for doing, not thinking; as easy, not difficult; as practical, not abstract."

Work is as relevant to most adult Americans as death and taxes. Work is directly relevant to teenagers as a critical and necessary step to adulthood. Presenting subject matter in a form and manner that makes it more meaningful and significant to the learner is an aspect of quality. If a student cannot see the significance of the subject matter—cannot make sense of it—then that student cannot incorporate that subject matter into his or her own life and behavior.

Courses that are labeled "academic" can provide vocational preparation for students who will work in many fields. For example, instruction in speaking and writing, usually labeled "academic," is clearly vocational in nature for the prospective lawyer or teacher. At the same time, instruction in plant physiology or cell biology may be considered vocational for the prospective greenhouse operator or farmer. From the students' point of view, requiring more work in conventional "academics" and less work in other areas is counterproductive.

Despite "related" courses such as business English, students perceive vocational courses as time for doing, not thinking; as easy, not difficult; and as practical, not abstract. In the same way, students perceive courses in physics, mathematics, or civics as time for thinking, not doing; as difficult, not easy; and as abstract, not practical. Both perceptions are severely limiting to students, but perpetuated by the traditions and practices of the schools. Until courses in both the academic and vocational areas become more permeable, more related, an integrated vocational and academic curriculum will be difficult to achieve.

The problems and possibilities in vocational education mirror those in academic education. In both areas, learning is compartmentalized into arbitrary pockets called "courses." Students are seldom asked and seldom expected to integrate skills and knowledge across these courses. Opportunities for rote learning, applicative learning, problem solving, and creativity are inherent in academic and vocational courses alike; similarly, enriching and boring experiences take place in both realms.

Curriculum developers in the schools must conceptualize knowledge, devise organizational arrangements, develop instructional methods, and implement administrative procedures that will assure students opportunities to experience the interrelatedness of ideas, the

implications and applications of knowledge, and the process of discovery, dissemination, and use of information. The totality of this educational experience can and must be relevant—to the student and to the real world. The artifacts of funding, legislative requirements and, policies regarding "tracking" in the school dare not deny young people access to valid information and experiences from any field.

What is really required today are programs and experiences that bridge the gap between the so-called "academic" and "vocational" courses. The theoretical and empirical bases as well as the practical and applicative aspects of academic courses and vocational courses must be made explicit and meaningful. This calls for a joint effort between the academic teacher and vocational teacher.

Vocational education in the integrated secondary curriculum includes career guidance and exploration, general employability skills, broad concepts of work and family, and general and specific occupational skill training. This content should not be limited to formal classroom courses. It would be part of a total school experience requiring, perhaps, internships in the community, part-time work, special projects, and independent studies.

The exploratory experiences should mirror the realities of the workplace. The general employability skills should be jointly identified by the education community and the potential employer. The concepts of work and family should address such areas as providing adequate care of young children while parents are at work, managing time and other resources, and coping with stress resulting from dual responsibilities of work and family. In an increasing number of intact families, both parents are employed; in single-parent families, the one parent is probably employed. Both groups have responsibility for the well-being of their families and for productivity at work. Those who feel secure about their family will be more productive workers; workers who feel satisfied with their jobs will be better able to cope with family demands.

The occupational skills portion of the curriculum must be based upon an analysis of the occupation for which the training is provided. Additionally, business, industry, and labor must be involved in vocational curriculum development and revision activities on a continuous basis to keep curricula current with technological advances.

Inherent in any secondary vocational curricula is the inclusion of recognized vocational student organization activity as an integral part of classroom instruction. Vocational student organizations enhance

motivation, occupational competencies, leadership skills, and the total development of the student in a unique setting involving both cooperative and competitive activities. Recognized student organizations provide additional benefits to the school by promoting parental, business, and labor support.

Teachers: Recruitment and Preparation

Secondary vocational teachers suffer from all the teacher problems described in previous commission reports and national studies—they tend to be underpaid, underprepared, and asked to work miracles. An increasing number of the best teachers are leaving the profession.

Recruitment of all teachers is hampered by low salaries, but other incentives may help in attracting high-caliber individuals to vocational classrooms. Such incentives might include scholarships, extended contracts (pay for additional months or hours of work), opportunities for updating occupational and teaching skills, time for parent and community contacts, or provision of modern instructional equipment and materials.

In addition to problems of recruitment and retention, teacher preparation programs vary in strength and rigor, even within a given state. The quality of preparation also varies across vocational areas. Some require a baccalaureate degree with the three standard components: general education, occupational specialty, and professional teacher education. Additionally, work experience may be required. Other teachers are certified by work experience in their field and have limited formal teaching experience. Both entry paths have problems.

Vocational teachers with baccalaureate degrees have difficulty obtaining sufficient occupational expertise and related work experience. The variety of courses to be taught within any one vocational area and the rapidity of change in the subject areas and workplace necessitate frequent updating.

On the other hand, teachers with expertise in their occupational area have greater need for access to educational programs that will enhance their teaching skills and help them obtain their baccalaureate degrees. The degree can be important to the image of these teachers. While highly respected for their occupational expertise, if their credentials are different from those of other vocational and academic teachers, they may become stereotyped.

Problems plague inservice training for vocational teachers, administrators, and teacher educators. They must stay up-to-date in their occupational specialty and refine their teaching skills. Strategies for inservice education include: exchange programs with business, industry, or human services agencies; support for additional course work; and organized inservice programs sponsored jointly by universities and school districts.

Experts from the community can also be used as a supplement to the regular teaching staff to improve quality and flexibility of programs. On a part-time basis, these experts could offer specialized courses (e.g., robotics); as resource persons, they could add depth and breadth to existing courses.

Standards and Accountability: Measuring Up

Federal and state program standards have been established to ensure the quality of vocational education at the local level. These standards are frequently seen as minimum program requirements since they are dominated by concern for such items as advisory groups, written program plans, equipment and facilities, staffing and staff development plans, access, and statute compliance. The Commission is concerned that however valuable such standards might be, they do not typically lend themselves to or include assessments of instructional quality or student achievement. If evaluation processes are to provide useful data for local program monitoring and improvement, they must include information on what goes on in the classroom and how students are affected.

". . . mandated program characteristics . . . do not ensure quality unless standards can be identified that reflect and accommodate unique local problems."

Accountability measures assess compliance with federal and state mandates for program quality, a necessary aspect of public support. But the routine reporting of mandated program characteristics requires much effort and does not ensure quality unless standards can be identified that reflect and accommodate unique local problems.

Achievement testing dominates measurement of student performance in basic academic subjects. Knowledge is subdivided into discrete units, delivered in curriculum modules, and monitored at regular intervals through standardized tests. We urge that such tests not be the sole criterion of school and program effectiveness. There is more to teaching and learning than high achievement scores. Schools and vocational education programs help young people achieve personal,

intellectual, social, and career goals. Achievement tests measure student success in only one small area of one of these goals; they should be only one small part of the student's performance assessment.

Traditionally, federal policy has made vocational educators responsible for providing needed occupational skills training, assessing the level of job skills attained by students, placing students in jobs, and gauging employer satisfaction with the training. Despite the fact that development of employability skills is a desired outcome of vocational programs, vocational educators do not control the labor market conditions affecting the employment of program graduates. It is clear to the Commission that standards, evaluation, and accountability activities must involve both educators and employers in the direct and effective use of evaluation information to improve teaching and learning.

Articulation: Fitting Together

Vocational education does not begin and end at the high school level; it occurs before, during, and after. We need close collaboration and planning across all educational levels.

The basic skills of written and oral communication and computation need to be mastered first in the elementary and middle or junior high school. The early stages of the career development—awareness and exploration—need to be well underway before students enter high school so they can make informed choices.

". . . we also advocate strong, positive working relations within the secondary school itself."

Articulation usually means establishing close working relations among elementary, secondary, and postsecondary schools. The Commission stretches this meaning—we also advocate strong, positive working relations within the secondary school itself.

Within comprehensive vocational programs, joint instructional projects have often provided exciting and highly effective learning experiences. For example, school-initiated residential construction or reclamation projects enable architectual drafting students to see their conceptualizations and drawings become reality, building trades students to gain a comprehensive experience, agriculture or horticulture students to apply important principles in landscape design and implementation, home economics students to formulate and translate

new concepts in interior design, and marketing students to experience the challenges of advertising and salesmanship. Clearly, these cooperative learning experiences convey and reinforce interdependence of the various occupational fields. The use of these cooperative endeavors must be expanded in the secondary school, and broadened to ensure the participation of students in math, English, science, and fine arts courses.

Secondary and postsecondary levels must also coordinate their programs. The "tech prep" curriculum being developed in many communities between high schools and community colleges illustrates how this can be done effectively. The program is solidly based in applied sciences, applied math, literacy courses, and technical programs. The high school vocational education part of the program covers career clusters and systems—electrical, fluid power, business, and mechanical. Study in such clusters and systems eases the transition to technical education programs in community colleges and other postsecondary institutions.

We need to identify and coordinate other continuing education options with secondary vocational education. Only in isolated communities have effective and close working relationships been established with the broad spectrum of continuing education agencies. Articulation and coordination agreements are needed with—

- nearby school districts,
- community colleges,
- postsecondary vocational schools
- private vocational schools,
- community-based organizations,
- training programs sponsored by the Job Training Partnership Act,
- apprenticeship programs, and
- military services.

Such articulation is especially needed in rural areas.

Leadership: Taking Charge

Vocational education has been part of a creative partnership among federal, state, and local governments since 1917. Each level of government has important leadership and financing responsibilities. This relationship has contributed materially to the development of vocational education but has carried with it some limitations.

"State vocational educators, in too many cases, have relied excessively on federal regulations as a substitute for developing a comprehensive educational philosophy."

In a historical sense, the federal role in vocational education has been twofold: problem solving (such as serving special populations, enhancing equity, and promoting economic development) and building capacity (by providing technical assistance, program performance data, and clearinghouse services). The essence of this relationship is spelled out in the state plan for vocational education, which is generated by each state and designed to explicate its needs and the uses of federal dollars consistent with the Vocational Education Act and the state's priorities.

As indicated earlier, accountability comes with federal support. The Congress must ensure that the dollars are focused on the national problems and federal priorities specified in the current act. This causes the use of funds to be circumscribed and focused. Such boundaries foster separation and hinder coordination and articulation with academic education and other employment and training systems. The Commission, however, believes that these hindrances are not insurmountable and that the benefits of the federal support outweigh the constraints that go with it. The Carl Perkins Vocational Education Act of 1984 has recognized the larger purposes of vocational education and broadened the criteria for judging the effectiveness of vocational education programs.

State vocational educators, in too many cases, have relied excessively on federal regulations as a substitute for developing a comprehensive educational philosophy. The failure to exert strong leadership is reflected in inadequate funding of vocational education by some states, in inequitable opportunities for all students to pursue vocational education, and in policies and standards that are relevant but not necessary for quality vocational education.

At the local level, school administrators and boards of education play a major role in determining the quality and type of vocational education offerings. Generally, where principals view vocational education positively and as equal in importance with academic education, more up-to-date and better quality programs exist. Conversely, where

principals view vocational education programs as "dumping grounds," the quality of programs is poor.

Many local school officials have not developed adequate mechanisms and strategies for staying in touch with what is actually going on in the classroom. They provide insufficient encouragement and opportunities for principals, teachers, and other staff to be flexible and creative. Improvement and innovation increase when instructional staff members, including classroom teachers, are given opportunities for professional renewal.

Business, Labor and the Community: Working with Vocational Education

"Small businesses and entrepreneurs... can bring much expertise to vocational programs."

Business and labor in America have historically worked closely with vocational education, more so than with any other secondary curriculum. Both groups have avidly participated in such collaborative activities as adopt-a-school programs, cooperative work experience programs, guest speakers, teacher employment or internships, training programs, field trips, and donation or sharing of equipment or in-kind services.

Collaboration between business, labor and the schools does not always take place, partly because school personnel do not initiate the request or do not give a complete and equal role to those who accept the invitation. Advisory committees—a concept with great potential—frequently fail when school administrators are not willing to make them full partners. Too often, schools treat advisory groups as "rubber stamps" and ignore their advice. With this type of treatment, advisory groups soon lose interest.

Another problem is that the membership of these groups is often limited to the larger business firms that can bring funding and resources to the school; the small businesses and the entrepreneurs are overlooked. These groups can bring much expertise to vocational programs. Many young people take jobs in small firms, and many vocational graduates have the skills and the desire to start their own businesses. An advisory council composed of the right people can help build curricula that will guide and assist students who desire self-employment.

Schools also need to involve public and not-for-profit private agencies in vocational programs. Vocational educators can collaborate with hospitals, for example, to develop comprehensive health care courses.

Two areas of business-labor-school collaboration stand out in the potential they hold for making vocational education more effective—curriculum development and cooperative education. We have barely scratched the surface in both areas.

In today's rapidly changing industrial world, the school alone cannot stay current with office technology, robotics, fiber optics, lasers, and other high technologies. Business and labor can help keep subject matter relevant and up-to-date. Administrators should create a climate in school that encourages teachers to seek business, labor, and community advice, and should incorporate worthwhile information and materials into their curricula.

Seeking and getting this help does not diminish educational control over curricula. It simply provides another resource to strengthen the programs. We shortchange our vocational programs if we disregard this contribution. We also confirm nagging suspicions that educators will gladly accept cash, equipment, and other services, but seldom accept advice on how to make our schools better.

But collaboration is a two-way street. Educators point out that businesses use their programs for recruitment but balk at contributing to training that might benefit other employers. Also, businesses frequently express the need for better educated youth and agree to the easy requests—such as field trips and guest speakers—but respond reluctantly to setting up training plans for vocational education students and supporting cooperative education.

Field-based Learning: More is Better

Field-based learning is student experience that is gained in the workplace or in community service. This learning is integral to secondary education and is an important experience for all students. Field-based experiences in general are varied in length, paid or unpaid, structured or unstructured, supervised or unsupervised, and provided during the school day or outside of school time. These field-based experiences contribute significantly to the maturity and employability of participating students.

"Cooperative vocational education, a form of field-based learning, has been one of the most successful aspects of vocational education. . . . Too few students are actually involved."

Cooperative vocational education, a form of field-based learning, has been one of the most successful aspects of vocational education. The distinguishing characteristics of cooperative vocational education are that the program is jointly planned, structured, and supervised. Further, it involves a written agreement between the school, employer, and student that outlines the planned learning experiences. Cooperative vocational education programs have high job placement records, and both students and employers express more satisfaction with this approach to field-based learning than any other.

Field-based learning programs benefit all students. These activities—

- provide assistance to students in career decision making;
- provide understanding of the reality of the workplace;
- allow for trial and error at a time when error is not devastating to a young person's work record;
- include opportunities to acquire necessary work habits, develop job skills, and establish an employment record;
- connect students and employers in mutually satisfactory arrangements; and
- motivate students by providing earnings and potential for regular employment.

The field-based program is mutually beneficial to the school and the participating business. The benefit to employers is access to a pool of potential employees who have proven employment skills. The school may benefit from reduced equipment and facility costs. However, the social and personal benefits to the individual student are greater than the financial benefits to the schools.

Such effective programs might be expected to enjoy wider use. Not so. Too few students are actually involved. The number of these programs and student participation in them must be significantly increased. We need more help from business, industry, labor, and public agencies to provide training slots and supervision for a greater number of students in a wider variety of occupations.

Recommendations:
Finishing the Agenda

For over 7 months this Commission has examined secondary vocational education. Site visits and hearings across the country have been conducted by teams and individual Commissioners. We solicited and received reams of written testimony.

"It is not this Commission's intent to recommend a single approach to vocational education."

The common theme in this mass of oral and written information is the diversity of the vocational education enterprise. This diversity ranges from strong differences of opinion on the value of local comprehensive high schools versus regional vocational schools to differing perceptions of the fundamental purpose of vocational education in the high school. There is diversity in many aspects of vocational programs: quality and status, their expectations and outcomes, their instructional approaches, their counseling and career planning programs. Wide differences exist across urban, suburban, and rural districts and in access and equity issues. Finally, there is diversity from one state or district to another in their commitment to vocational education as a mainstream component of every young person's education.

It is not this Commission's intent to recommend a single approach to vocational education. We believe that some diversity is necessary to account for local, district, and regional needs. We also believe that a wide variety of innovative vocational approaches are needed to reach and accommodate the differences in student population.

In our review of the role of secondary vocational education, we have found that all secondary students need a balance of both academic and vocational experiences to prepare themselves for life in a changing world. We visited high schools where this was happening.

The issue is quality. Lack of quality has been the dominant theme in all of the reports examining academic education over the past several years. Quality is a major issue in vocational education. All of the recommendations are set in that context. No single group can enact all these recommendations. Recognizing the complexity and diversity of vocational education, many groups—public and private, in and out of education—must cooperate to achieve the quality and direction needed to put vocational education where it belongs. In identifying the

recommendations set forth here, we have been mindful of the various constituencies that have an interest in vocational education, not the least of which are the vocational administrators and teachers who must ultimately carry out any change. But the driving force behind every recommendation has been concern for the student. These recommendations are designed to give every young person in America the opportunity and the right to experience the best of academic and vocational education. For some time to come, this is the unfinished agenda.

Access

We have made six recommendations pertaining to problems of access to vocational education. Each is intended to extend and enrich the benefits of vocational preparation to all secondary students.

- All students should be able to choose from a comprehensive set of course offerings across academic and vocational areas.
- Student participation in extracurricular and school social activities must not be limited for those students who have enrolled in vocational areas of concentration.
- Systematic programs of interest and aptitude assessment, career planning, and occupational information designed to facilitate student curriculum choices must be available to all students.
- School counselor functions need to include cooperative activity with teachers, the use of group guidance techniques, computer-assisted guidance, comprehensive career information systems, and related methods designed to provide career guidance to all students.
- Counselor-student ratios should not exceed 250 students per counselor.
- While we recognize the need to consolidate some programs into regional area vocational centers and vocational high schools, vocational education should take place primarily in the comprehensive high school.

Equity

Equity of educational opportunity is a deeply cherished American ideal that ought not, and need not, be compromised to serve a false sense of excellence. We make four recommendations pertaining to equity intended to reduce the stigma associated with certain courses of study and to ensure that school officials aggressively pursue the full participation of special student groups in vocational courses and programs.

- State and local school officials must guarantee educational equity in their schools. This includes full participation of special population youth and potential dropouts.
- Schools should not provide separate tracks that lead to distinct diplomas.
- States and local schools should undertake the use of individualized employability development plans with all students to coordinate instructional support services and career planning.
- School administrators, counselors, and vocational teachers must guarantee that males and females have equal access to and are recruited for all vocational offerings. Information on sex bias, stereotyping and discrimination must be incorporated into the instructional program and guidance services.

Curriculum

We make six recommendations pertaining to curriculum. Three recommendations focus on needed improvements in the content of vocational courses. Three other recommendations focus on mandated curricular requirements. Both are equally important in developing an integrated curriculum.

- States should not mandate curricular requirements that restrict students' opportunities to participate in vocational education experiences.
- Secondary vocational education courses should provide instruction and practice in the basic skills of reading, writing, arithmetic, speaking, listening, and problem-solving. This

addresses the current demand for the new basics without locking all students into the academic classroom.

- In addition to developing occupational skills, secondary vocational courses must develop self-esteem, positive attitudes toward work, safe work habits, job-seeking skills, and other general employability skills.

- Vocational education courses must be enriched and diversified to make these courses attractive to all students, including the college bound.

- Students should be allowed to satisfy some requirements for high school graduation—for example in the areas of mathematics, science, English, or social study—with selected courses in areas of vocational education that are comparable in content coverage and rigor.

- State and local educational administrators should provide the opportunity for all vocational students to participate in recognized vocational student organizations.

Teacher Recruitment and Preparation

We recommend that action be taken by university teacher educators and local school officials to upgrade the quality and performance of vocational classroom teachers. The five parts of this recommendation pertain to recruitment, preservice teacher education, certification, and inservice teacher preparation.

- Universities should offer credit for applicable work experience, including credit toward a baccalaureate degree.

- Certification of all teachers should include both an academic program and work experience record of demonstrated mastery in their field.

- Competitive salaries and other incentives must be provided to attract and retain teachers.

- Upgrading opportunities for vocational teachers, counselors, administrators, and teacher educators should be provided through a combination of workshops, seminars, course work for credit, and back-to-industry work experience.

- All vocational teacher education programs must be improved to reflect recent research and development on teaching, learning, and instructional technology.

Standards and Accountability

Current program standards and accountability measures are useful but not central to issues of teaching and learning. Therefore, our one recommendation is that the effectiveness of vocational instruction should be judged by before-after changes in student knowledge, skills, and attitudes.

Articulation

Articulation—meaning close interaction among different levels of education—occurs both vertically, across grade levels, and laterally, among school and non-school providers of employment-related education and training. We believe that such coordination and cooperation must move from the realm of rhetoric into the world of practice. Our two recommendations are directed at key actors and actions to achieve this goal.

- Principals must provide for curriculum coordination across all academic and vocational education subject areas and throughout all educational levels.

- Within state policy guidelines, each secondary school should formulate or contribute to a meaningful and cost-efficient regional plan for providing employment-related education. Such plans should include policies and formal arrangements among elementary and junior high schools, community colleges, and other employment training-related organizations.

Leadership

Effective leadership at local, state, and federal levels is central to improving and expanding vocational education. We make six recommendations directed to these groups.

- Federal leadership must ensure that appropriate vocational education opportunities are available for the educationally disadvantaged.

- Federal funding should be increased to support research and development on vocational education, experimental and innovative programs, and the collection and dissemination of information.

- State leadership should initiate and coordinate the articulation of academic and vocational curricula.

- Local school officials, from central office administrators to building administrators, are responsible for the image of vocational education in their schools and school districts and must make certain that vocational programs are not used as a "dumping ground."

- State agencies and local schools should use federal allocations to supplement, not supplant, state and local funds for vocational education.

- State and local policymakers should provide more encouragement and funds to develop, test, and disseminate innovative vocational education programs.

Business, Labor, and Community

We make two straightforward recommendations about expanding the critical role of business, labor, and the community in vocational education.

- Schools must involve business, labor, and the community in such vital areas as teacher development, curriculum update and evaluation, career education, and student employability.

- Business and labor must seek out opportunities to work with schools to improve what goes on in the classroom.

Field-based Learning

Field-based learning is grossly underutilized. Therefore, we recommend that supervised, field-based learning experiences be made available to all secondary students. Cooperative education must be a "capstone" element in all vocational education programs.

The Vocational Education Enterprise

Governance and Funding

Public vocational education in America is:

- funded primarily by state and local government—almost $9 billion annually
- assisted by federal funds—over $900 million in 1984, or about 10 percent of total dollars spent for programs

Schools[1]

- In 1978, 15,706 public comprehensive or vocational high schools offered vocational education.
- There are almost 1,394 area secondary vocational schools (or centers) which may serve several attendance units within a single district or they may serve several districts.

Teachers[2]

- In 1978 there were more than 354,000 vocational education teachers at the secondary, postsecondary, and adult levels. Nearly half (42 percent) taught at the secondary level.
- Roughly 24 percent of the secondary vocational teachers teach on a part-time basis. Most of these parttime teachers hold regular positions in private industry.

Participation in Vocational Programs

- In 1982, 27 percent of all high school seniors described the high school program in which they were enrolled as vocational.[3]

- 75 percent of all 1982 graduates of public high schools had taken at least one vocational course that could be described as occupational, that is, a course designed to provide intensive preparation for a specific occupation.[4]

- 95 percent of all 1982 graduates of public high schools had earned some credit in vocational courses.[4]

- Vocational courses are usually classified in nine subject matter areas: agriculture, business, marketing, technical, health, trades and industry, vocational home economics, industrial arts, and consumer home economics.

- Course work is also classified as occupational or exploratory. Occupational vocational courses prepare participants for specific semiskilled, skilled, or technical occupations. Exploratory vocational courses do not directly relate to paid employment and typically provide an introduction to or overview of a particular subject area.[4]

- Public school graduates of lower socioeconomics status (SES) and those with lower cognitive test scores tended to earn more vocational credits than those of higher SES and in higher test groups.[4]

- Hispanic graduates of public high schools earned more credits in vocational education than did their black or white counterparts.[4]

- If ability is controlled, blacks are more likely than whites to enroll in an academic program.[5]

Outcomes of Vocational Education

- Among males, twice as many vocational concentrators as nonvocational graduates worked in craft occupations (33 percent vs. 15 percent).[6]

- Among females, 61 percent of vocational concentrators worked in clerical occupations whereas 37 percent of nonvocational graduates did.[6]

- Male secondary students who enroll in vocational education are approximately 8 times more likely to be self-employed than are males who did not take vocational education. However, the experience for women is the opposite—seldom are women who took secondary vocational education self-employed.[7]

Notes

[1]**Digest of Education Statistics: 1982** (p. 158) U.S. Department of Education, National Center for Education Statistics.

[2]National Center for Education Statistics. **The Condition of Education.** Prepared by M.A. Golladay and R.M. Wulfsberg, Washington, DC: U.S. Department of Education, 1981.

[3]U.S. Department of Education, National Center for Education Statistics, High School and Beyond Study. 1980 Sophomore Cohort. Data File User's Manual, 1983.

[4]National Center for Education Statistics. **The Condition of Education.** Prepared by V.W. Plisko. Washington, DC: U.S. Department of Education, 1984.

[5]Berryman, S. **Vocational Education and the Work Establishment of Youth** (N-1475-ASC). Santa Monica, CA: The Rand Corporation, 1980.

[6]Campbell, P.B., Orth, M.N., and Seitz, P. **Patterns of Participation in Secondary Vocational Education.** Columbus, Ohio: The National Center for Research in Vocational Education; The Ohio State University, July 1981.

[7]McCaslin, N.L. "Outcomes Associated with Participation in Secondary Vocational Education: A Synthesis of Recent Studies at the National Center for Research in Vocational Education." Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, April 1984.

Biographical Sketches of Commission Members

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James Auerbach is Staff Representative of the AFL-CIO Department of Education in Washington, D.C. He has been a teacher, president of the New Jersey State Federation of Teachers, and research fellow with the Smithsonian Institution.

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Billy Castorena is Principal of Alamogordo Senior High School, Alamogordo, New Mexico. His experience includes teacher, president of the Board of Regents, Western New Mexico University, and community and education leadership positions leading to his inclusion in the 1980-81 publication of Who's Who in American School Administrators.

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Jack Frymier is Distinguished Educator with the Indianapolis Public Schools. He has been a high school social studies teacher, public school administrator, and professor of education. He is a generalist in the field of education, having spoken and written extensively on related subjects.

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Edwin Herr is Professor and Head of the Division of Counseling and Educational Psychology, The Pennsylvania State University. He has assumed leadership in several national professional organizations and has received numerous awards for scholarship and leadership in guidance and counseling.

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Marion Holmes is the Executive Director for Career and Vocational Education, School District of Philadelphia. She has been an elementary, high school and private postsecondary teacher, accountant, researcher and consultant on vocational education and special populations.

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Ruth Hughes is Distinguished Professor and Head of Home Economics Education at Iowa State University. She has been a high school home economics teacher, teacher educator, program evaluator, writer, and editor. Research projects include competency-based teacher education, achievement and performance testing, and other topics.

R. Mac Irving

Mac Irving is co-founder and Executive Vice President of Frit Industries, Inc. in Ozark, Alabama and Executive Vice President of Frit Car and Equipment, Inc. of Brewton, Alabama. He is currently Chairman of the Ozark City Board of Education and Vice President of the Alabama Association of School Boards. He has been a high school vocational agriculture teacher, university assistant professor, and leader in many education and community organizations.

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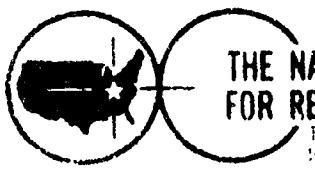

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